

REMARKS

The present application relates to hybrid maize plant and seed 33R77. Claims 1-32 are currently pending in the present application. Applicant respectfully requests consideration of the following remarks.

Detailed Action

A. Specification

The Examiner has objected to the specification for containing blank lines on page 7 in the bottom paragraph. Applicant respectfully submits that the actual ATCC deposit will be delayed until the receipt of notice that the application is otherwise in condition for allowance. While Applicant does not agree that this rejection is appropriate under 37 C.F.R. §§ 1.801-1.809, Applicant will refrain from deposit of Hybrid 33R77 until allowable subject matter is indicated. Once such notice is received, an ATCC deposit will be made, and the specification will be amended to contain the accession number of the deposit, the date of the deposit, a description of the deposited biological material sufficient to specifically identify it and to permit examination and the name and address of the depository. The claims (1, 5 and 7) will also be amended to recite the ATCC deposit number. In addition, Applicant submits that at least 2,500 seeds of Variety 33R77 will be deposited with the ATCC. In view of this assurance, the rejection under 35 U.S.C. § 112, first paragraph, should be removed (MPEP § 2411.02). Such action is respectfully requested.

B. Claim Objections

The Examiner objects to claims 6, 12, 16, 25 and 22 for the use of "A". Applicant has now amended these claims to include --The-- as suggested by the Examiner, thereby alleviating this objection.

C. Claims

Applicant acknowledges the addition of new claims 33 through 43. The new claims do not add new matter as there is little support for the claims in the originally filed specification.

Double Patenting

The Examiner rejects claims 1-32 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-32 of U.S. Patent No. 6,107,551 ('551). The Examiner states that although the conflicting claims are not identical, they are not patentably distinct from each other because they both appear to be drawn to the same maize seed, plants, plant parts and methods. The Examiner acknowledges that "the instantly claimed plants and the patented plants have different designations". The Examiner further states that the designation "33R77" of the instantly claimed cultivar is arbitrarily assigned, and does not provide any patentable distinction from the cultivar claimed in the '551, "33Y11". The Examiner goes on to state that any differences between 33R77 and 33Y11 are due to minor morphological variations that do not confer patentable distinction.

Applicant respectfully traverses this rejection. Claims 1-32 are patently distinct because they involve a novel maize seed, plants, plant parts, and methods. Applicant's detailed arguments are set forth infra in the Issues under 102/103 section. Applicant further asserts the use of the designation "33R77" is not arbitrarily assigned. It is common practice within plant breeding that a new and distinct maize seed is designated with a numerical number such as 33R77 which defines the claimed hybrid maize seed which will be deposited under an ATCC accession number. The use of such a designation is a common practice within the art and would be well understood by one skilled in the art to be two distinct and unrelated hybrid maize seeds. In addition, as provided in 37 C.F.R. §§ 1.801-1.809, Applicant wishes to reiterate they will refrain from deposit of Hybrid 33R77 until allowable subject matter is indicated. Once deposit is completed Applicant will amend claims 1, 5 and 7 accordingly and this rejection will be moot. Therefore, Applicant submits this terminology is not indefinite and reconsideration is respectfully requested.

Rejections Under 35 U.S.C. § 112, Second Paragraph

Claims 1-32 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

Claims 1, 5, 7, 11, 15, 19, 24, 28 and 32, and claims dependent thereon, stand rejected as indefinite in the recitation of a plant by the designation "33R77". The Examiner states that since the name "33R77" is not known in the art, the use of this name does not carry art-recognized limitations as to the specific or essential characteristics that are associated with that denomination". The Examiner further states that the name "33R77" does not clearly identify the claimed seeds, plants, and plant parts and does not set forth the metes and bounds of the claimed invention. The Examiner also states that amendment to claims 1, 5, and 7 to recite the ATCC deposit number in which hybrid maize seed 33R77 has been deposited would overcome the rejection.

Applicant respectfully traverses this rejection. As stated previously the use of the designation "33R77" is not indefinite. One ordinarily skilled in the art would clearly understand that this designation is drawn to a new and distinct hybrid maize seed with the designation of 33R77 and the morphological and physiological traits that are disclosed in the specification. (See Tables 1-4, pgs. 17-34). Applicant asserts that the use of such a designation is a common practice within the art and would be well understood by one skilled in the art to be designating two distinct and different hybrid maize seeds. In addition, Applicant wishes to reiterate that under 37 C.F.R. §§ 1.801-1.809, Applicant will refrain from deposit of hybrid 33R77 until allowable subject matter is indicated. Once deposit is completed, Applicant will amend claims 1, 5 and 7 accordingly and this rejection will be moot.

Claims 11, 15, 19, 24, 28 and 32 are indefinite in their recitation of "high", "above average" and "suited", as the Examiner states these terms are relative terms that have no definite meaning. The Examiner states it is not clear what type of yield, grain yield, pollen yield, seed yield, etc., the recitation is referring to. Finally the Examiner also states the recitation of "Central Corn Belt, Southeast, Southcentral, Southwest, and Western regions of the United States" also renders the claims indefinite.

Applicant respectfully traverses this rejection. Each of these claims recites two requirements, first that 33R77 be an ancestor of the plant and second, that the claimed plant be "capable of expressing a combination of at least two 33R77 traits" selected from a Markush grouping. Applicant notes that the Markush listing is directed to "33R77" traits. Thus, Applicant submits that the recitation of 33R77 traits clearly delineates the traits listed as those

which are from 33R77 or ancestors thereof. The recitation of "33R77" in front of the term traits clearly indicates that the traits must be originating from 33R77. This is particularly so since the claim also requires that the plant 33R77 must be an ancestor of the claimed plant. Applicant further submits that the adjectives used within the claims are not unduly narrative or imprecise as they do clearly characterize and positively recite the degree of expression of the particular traits within the application in Tables 1-4 (pages 18-34). This terminology is well known in the art and commonly used within breeding techniques of hybrid plants. In addition, Applicant asserts it is exactly clear what states or geographic areas define these regions and would be understood to one skilled in the art. Applicant respectfully submits that this language is not indefinite and would be understood by one in the art and is the terminology of use within the art. Therefore, Applicant respectfully requests reconsideration.

Furthermore, in Georgia-Pacific, the Federal Circuit stated that "...the policy of the patent statute contemplates granting protection to valid inventions, and this policy will be defeated if protection were to be accorded to those patents which were capable of precise definition." Georgia-Pacific Corp. v. U.S. Plywood Corp., 258 F.2d 124, 136, 118 U.S.P.Q. 122 (2nd Cir.). While some decisions have advocated the general statement that "[a]n invention must be capable of accurate definition, and it must be accurately defined, to be patentable, (See United Carbon Co. v. Binney & Smith Co., 1942, 317 U.S. 228, 237, 63 S.Ct. 165, 170, 87 L.Ed. 232), the Federal Court has stated that "such general statements, however, must be viewed in the context of circumstances. Objectionable indefiniteness must be determined by the facts in each case, not by reference to an abstract rule." Georgia-Pacific at 136. "Patentable inventions cannot always be described in terms of exact measurements, symbols and formulae, and Applicant necessarily must use the meager tools provided by language, tools which admittedly lack exactitude and precision. If the claims read in light of the specification, reasonably apprise those skills in the art both in utilization and scope of the invention, and if the language is as precise as the subject matter permits, the courts can demand no more." Id. (See North American Vaccine Inc. v. American Cyanamide Co., 7 F.3d 1571, 28 U.S.P.Q.2d 1333, 1339 (Fed. Cir. 1993)). Moreover, it is against the policy of the patent statute to bar patent protection for inventions that are incapable of precise definition. Georgia-Pacific at 136. With respect to the above-mentioned

terms, the claims are as precise as the subject matter of the invention permits. Therefore, Applicant respectfully requests reconsideration of the claims.

Claims 10, 14, 18, 23, 27, and 31 are indefinite for improper antecedent basis. The Examiner states the claims indicate they are directed to the corn plant breeding program of claims 9, 13, 17, 22, 26, and 30, respectively. However, claims 9, 13, 17, 22, 26, and 30 are directed to methods, not programs. The Examiner suggests that the recitation "maize plant breeding program" in line 1 of claims 10, 14, 18, 23, 27, and 31 be replaced with --method--.

Applicant has amended the claims in accordance to Examiner's suggestion by changing the recitation "corn plant breeding program" in line 1 of claims 10, 14, 18, 23, 27 and 31 with --method--, thus alleviating this rejection.

In light of the above remarks, Applicant submits that claims 1-32 clearly define and distinctly claim the subject matter Applicant regards as the invention. Applicant respectfully requests reconsideration and withdrawal of the rejections under 35 U.S.C. § 112, second paragraph.

Rejections Under 35 U.S.C. § 112, First Paragraph

Claims 8, 11-19, 21, and 24-32 were rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The Examiner asserts the claims are broadly drawn towards a corn plant produced by growing seed of any hybrid maize seed designated 33R77, wherein said plant is male sterile; or any maize plant or its parts wherein at least one ancestor is 33R77 and expresses a combination of at least two 33R77 traits; or a hybrid maize plant grown from seed 33R77, or which has all the morphological and physiological traits as the plant grown from 33R77 seed, and which contains one or more transgenes; or a method for developing a maize plant and the maize plant breeding program comprising said hybrid maize plant comprising one or more transgenes; or any maize plant wherein at least one ancestor is the hybrid maize plant comprising one or more transgenes and which expresses at least two 33R77 traits, or a hybrid maize plant grown from 33R77 seed wherein the genetic material contains one or more transgenes transferred by backcrossing; or a

method for developing a maize plant in a maize plant breeding program comprising said hybrid maize plant comprising one or more genes transferred by backcrossing; or any maize plant where at least one ancestor is the hybrid maize plant comprising one or more genes transferred by backcrossing which expresses at least two 33R77 traits. The Examiner further states the specification does not describe 33R77 as being male sterile. The specification discusses how plants may be manipulated to be male sterile, however the morphological and physiological description of plant 33R77 described in the specification does not indicate that it is male sterile.

Applicant respectfully traverses this rejection. Applicant asserts that large scale commercial hybrid maize production requires the use of some form of male sterility system which controls or inactivates the male fertility (page 2, specification). Applicant respectfully submits that the specification supplies an extensive description and definition of "male sterility" in the hybrid 33R77 (pages 2-4, specification). The present invention teaches how a "reliable method of controlling male fertility in plants offers the opportunity for improved plant breeding" (page 2, specification). It is essential to understand that a hybrid maize seed that is produced using cytoplasmic male sterile (CMS) inbreds are "[p]lants.... are male sterile as a result of factors resulting from the cytoplasmic, as opposed to the nuclear, genome. Thus, this characteristic is inherited exclusively to the female parent in maize plants, since only the female provides cytoplasm to the fertilized seed. CMS plants are then fertilized with pollen from another inbred that is not male sterile" (page 2, specification). Applicant respectfully submits that claims 8, 11-19, 21 and 24-32 do clearly define and distinctly claim the subject matter Applicant regards as the invention. However, in order to expedite prosecution, Applicant has now amended claims 8 and 21 by adding the recitation "has been manipulated to be male sterile", as suggested by the Examiner, thus alleviating this rejection. Support can be found on page 13 of the specification, wherein it states "[i]t should be understood that the inbred can, through routine manipulation of cytoplasmic or other factors, be produced in male-sterile form. Such embodiments are also contemplated within the scope of the present claims."

The Examiner further states the specification does not describe the plants developed by the maize breeding programs, transgenic 33R77 plants, 33R77 plants further comprising genes transferred by backcrossing, or maize plants wherein at least one ancestor is corn variety 33R77 and which expresses at least two of the traits listed in claims 11, 15, 19, 24, 28 or 32. Given the

breadth of the claims encompassing corn plant 33R77 the Examiner states the specification fails to provide an adequate written description of the multitude of corn plants and/or parts encompassed by the claims.

Applicant respectfully traverses this rejection. Applicant has amended claims 11, 15, 19, 24, 28 and 32 by adding the threshold, having 50% of the ancestral alleles, that limits the variation permitted among the genus, as well as an assayable function, capable of expressing at least a combination of two traits of 33R77. There is literal support for the amended claims found in the specification on page 3 and beginning on page 32 of the instant specification. Plant breeding techniques known in the art and used in the maize plant breeding program include, but are not limited to the following: recurrent selection backcrossing, pedigree breeding, restriction length polymorphism enhanced selection, genetic marker enhanced selection and transformation. With the amendments to the above-stated claims, Applicant has identified a transgenic 33R77 plant (claim 12), a 33R77 plant further comprising genes transferred by backcrossing (claim 14), or a maize plant wherein at least one ancestor is maize variety 33R77 (claim 15) by defining a particular threshold that limits variation and reciting a functional test to identify such plants. In addition, Applicant has drafted new claims 33-43 which Applicant believes come within the purview of the written description requirement and do not add new matter. Under the written description requirement, Applicant should be allowed to claim the progeny of a cross of maize plants crossed with 33R77 with phenotypic characteristics since distinguishing identifying characteristics in the chemical and biotechnological arts, dealing with DNA, are those such as: partial structure, physical and/or chemical properties, functional characteristics, known or disclosed correlation between structure and function, method of making, and combinations of the above. In plants, these identifying characteristics are those detectable in the phenotype which are manifested through gene expression. Claims to a particular species of invention are adequately described if the disclosure of relevant identifying characteristics are present in the application. Again, one of ordinary skill in the art is reasonably apprised in knowing that a plant crossed with 33R77 will result in a plant having half of the genetic contribution of 33R77. A further limitation set by Applicant is that the plants must be capable of expressing a combination of at least two phenotypic characteristics of 33R77.

Further, Applicant asserts the specification supplies an extensive definition and description of 'transgene' and transgenes of interest. (See generally pages 36-48 and pages 42-46 for an extensive list of potential transgenes.) Applicant also notes, a person having skill in the art could insert a DNA gene into a selected maize plant. The Examiner also states that the insertion of a single copy of a gene into a plant would produce a plant that is indistinguishable from its non-transformed plant. Applicant has defined transgenes in the present application in the paragraph that spans pages 36-37 as follows:

With the advent of molecular biological techniques that have allowed the isolation and characterization of genes that encode specific protein products, scientists in the field of plant biology developed a strong interest in *engineering the genome of plants to contain and express foreign genes, or additional genes* (perhaps driven by different promoters) in order to alter the traits of a plant in a specific manner. *Such foreign, additional and/or modified genes are referred to herein collectively as "transgenes".* Over the last fifteen to twenty years several methods for producing transgenic plants have been developed, and *the present invention, in particular embodiments, also relates to transgenic versions of the claimed hybrid 33R77.*

(emphasis added) The present application clearly describes and defines a transgene to be a gene transferred into a plant wherein the product of that gene is expressed. This expression will confer a new or improved trait into that plant. However, this gene is but a tiny fraction of the entire genome. In other words, the plant of claim 12 is distinguishable from the prior art plants just as is hybrid 33R77 without the transgenes. Further, the plant of claim 12 also contains a trait(s) that is either improved or additional to the traits of the maize plant of claim 2. The 33R77-transgene plant still expresses the unique combination of traits of 33R77 without the transgenes with the exception of the traits expressed by the transgenes. The trivial modifications introduced by the transgenes to the unique invention of 33R77 are clearly supported and described in the present application.

Finally, the Examiner asserts that the specification provides a narrative of the transgene within the scope of the claim to particularly point out and distinctly claim the subject matter the applicant regards as the invention. However, Applicant respectfully submits that "[t]he test for definiteness is whether one skilled in the art would understand the bounds of the claim when read in light of the specification. . . . If the claims read in light of the specification reasonably apprise those skilled in the art of the scope of the invention, § 112 demands no more. . . . The degree of

precision necessary for adequate claims is a function of the nature of the subject matter." Miles Laboratories, Inc. v. Shandon Inc., 997 F.2d 870 (Fed. Cir. 1993).

In light of the above remarks, Applicant respectfully requests reconsideration and withdrawal of the rejections to claims 8, 11-19, 21 and 24-32 under 35 U.S.C. § 112, first paragraph.

Claims 1-32 stand rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Applicant respectfully traverses this rejection and reiterates with regard to the deposit of Hybrid 33R77, Applicant wishes to note that:

- a) during the pendency of this application access to the invention will be afforded to the Commissioner upon request;
- b) all restrictions upon availability to the public will be irrevocably removed upon granting of the patent;
- c) the deposit will be maintained in a public depository for a period of thirty years, or five years after the last request for the enforceable life of the patent, whichever is longer;
- d) a test of the viability of the biological material at the time of deposit will be conducted (see 37 C.F.R. § 1.807); and
- e) the deposit will be replaced if it should ever become inviable.

Applicant wishes to state that the actual ATCC deposit will be delayed until the receipt of notice that the application is otherwise in condition for allowance. Once such notice is received, an ATCC deposit will be made, and the specification will be amended to contain the accession number of the deposit, the date of the deposit, a description of the deposited biological material sufficient to specifically identify it and to permit examination and the name and address of the depository. The claims will also be amended to recite the ATCC deposit number. In addition, Applicant submits that at least 2,500 seeds of Hybrid 33R77 will be deposited with the ATCC.

In light of the above remarks, Applicant submits that claims 1-32 clearly describe and distinctly claim the subject matter Applicant regards as the invention. Applicant respectfully requests reconsideration and withdrawal of the rejections under 35 U.S.C. § 112, first paragraph.

Issues Under 35 U.S.C. § 102/103

Claims 1-32 stand rejected under 35 U.S.C. § 102(e) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Whitaker (U.S. Patent 6,107,551). The Examiner states the claims are broadly drawn towards hybrid maize seed designated "33R77". The Examiner further states that Whitaker teaches seed of a hybrid maize line designated "33Y11", plants produced by growing said seed, and plants and plant parts, including pollen and ovules. The Examiner states that it appears that the claimed plant and seed to the instant invention may be the same as 33Y11, given that they exhibit similar traits, such as a relative maturity of 113 based on the comparative relative maturity rating system for harvest moisture of grain, and has exceptional stalk lodging resistance, which indicates that its stalk is of above average quality. The Examiner concludes stating that the claimed invention is *prima facie* obvious as a whole to one of ordinary skill in the art at the time it was made, if not anticipated by Whitaker.

Applicant respectfully traverses this rejection and requests reconsideration of claims 1-32. The Applicant would like to point out that the inventions 33R77 and 33Y11 are not the same inventions. Nor are their differences minor morphological variations. Applicant submits that the claimed plant cannot be rendered obvious as it possesses a unique combination of traits which confers a unique combination of genetics. Moreover, Applicant claims a method of making a plant which did not previously exist. Pursuant to the recent Federal Circuit decision, Elan Pharmaceuticals, Inc. v. Mayo Foundation for Medical Education & Research, No. 00-1467 (Fed. Cir. Aug. 30, 2002), "a novel patented product is not "anticipated" if it did not previously exist." *Id.* This is the case whether or not the process for making the new product is generally known. *Id.* The invention 33R77 has not previously existed as it is the result of the crossing the two maize inbred lines GE515419 and GE567914.

Furthermore, when looking at the tables of both inventions, hybrids created using 33R77 as one of the parents are clearly not anticipated by hybrids made using 33Y11 as one of the

parents. The inventions 33R77 and 33Y11 differ for various traits that are not minor. For example, 33R77 has more resistance to Diplodia Ear Rot when compared with 33Y11. As reported in Table 1, 33R77 has a resistance of 4 (page 20). As reported in Table 1 of 6,107,551 Patent, 33Y11 demonstrates a lower tolerance, with more susceptibility of 2. Another example, as reported in Table 4, 33R77 has a growing degree unit of silk emergence of 1430 (page 34). As reported in Table 3 of the 6,107,551 Patent, 33Y11 demonstrates a lower degree unit of 1410. A third example of the differences is that 33R77 exhibits a higher drydown than 33Y11. As reported in Table 4, 33R77 has a drydown of 6. As reported in Table 3, 33Y11 has a drydown of 5.

Other traits which differ between the two inventions include: anther color (33R77 pink, 33Y11 red), length of ear node leaf (33R77 94.1, 33Y11 88.4), silk color (33R77 light green, 33Y11 red), Anthocyanin-pigmented brace roots (33R77 dark, 33Y11 absent) and resistance to Corn Lethal Necrosis (33R77 average resistance, 33Y11 no teaching).

The aforementioned examples all illustrate that there are large differences between 33R77 and 33Y11. The examples listed are not exhaustive but they do give ample evidence that the inventions are not the same. Furthermore, when looking at the tables of both inventions, hybrids created using 33R77 as one of the parents are clearly not anticipated by hybrids made using 33Y11 as one of the parents.

Applicant further submits that the claims do not simply recite traits, but instead recites these specific traits only to the extent that they are "33R77" traits; thereby being derived from the seed/germplasm of 33R77. Note, variety with respect to agricultural variety, can be defined as a group of similar plants that by structural features and performance can be identified from other varieties within the same species. When looking at maize plants it would be possible for one ordinarily skilled in the art to find many traits that are similar between varieties such as the disease resistance or growth habit. Nonetheless, the claim also recites that the claimed plant must have 33R77 as an ancestor further indicating that these traits must originate from the 33R77 plant not 33Y11. In response to the Examiner's contention that one could not distinguish the claimed plant from the prior art which shows each of these traits, Applicant submits that one can easily tell by reference to the plants breeding history, which can be confirmed by its molecular profile whether the plant did indeed have plant 33R77 as an ancestor and expressed two or more

"33R77" traits. Further, any phenotypic trait that is expressed is a result of a combination of all of the genetic material present in the plant, and 33R77 will have its own unique genetic background that will give rise to the claimed plant and this profile along with its combination with other plants will result in a unique combined genetic profile that is the product claimed.

Furthermore, there is no expectation of success that the crossing of the Hybrid 33Y11 with some yet to be identified plant would yield a plant with two of the traits enumerated in the claimed invention because that particular plant did not begin with the claimed seed 33R77 which is essential. Applicant asserts that it is not the phenotypic characteristics alone that are claimed and taught in the instant invention. It is a combination of physiological and morphological characteristics, as claimed, which make the present Hybrid non-obvious and not anticipated over Whitaker. Further, In re Thorpe, states that "a product by process claim may be properly rejected over prior art teaching the same product produced by a different process", as noted by the Examiner. 227 U.S.P.Q. 964, 966 (Fed. Cir. 1985). However, Applicant submits that this is not the same product physiologically or morphologically as the cited prior art as can be evidenced by one skilled in the art through analysis of the data tables in each. In addition, it is impermissible to use hindsight reconstruction and the benefit of Applicant's disclosure to pick among pieces which are present in the art, there must be some suggestion to make the combination and an expectation of success. In re Vaack, 20 U.S.P.Q.2d 1434 (Fed. Cir. 1991). Further, any phenotypic trait that is expressed is the result of the genetic material present in the plant, and 33R77 will have its own unique genetic background that will give rise to the claimed plant and this profile along with its combination with other plants will result in a unique combined genetic profile that is the product claimed. Thus, the present application deserves to be considered new and non-obvious compositions in their own right as products of crossing when 33R77 is used as a starting material.

In light of the above, Applicant respectfully requests the Examiner reconsider and withdraw the rejection to claims 1-32 under 35 U.S.C. § 102(e) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Whitaker (U.S. Patent 6,107,551).

Issues Under 35 U.S.C. § 103

Claims 1-32 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Whitaker (U.S. Patent 6,107,551). The Examiner states the "claims are drawn to a hybrid maize plant exhibiting all of the characteristics of 33R77".

Applicant respectfully traverses this rejection. When looking at a maize plant it would be possible to find many traits that are similar between varieties such as the color of flowers or growth habit. However, to say there are similarities in phenotype between two varieties is not the same as saying that the two varieties have the same morphological and physiological characteristics as a whole, or that one is an obvious variant of the other. Further, similarity in phenotype does not mean that the two varieties will perform similarly, particularly in a breeding program. As stated above, variety with respect to agricultural variety may be defined as a group of similar plants that by structural features and performance can be identified from other varieties within the same species.

Applicant submits that Hybrid 33Y11 does not exhibit the same characteristics as 33R77. Applicant will illustrate how 33R77 and 33Y11 are different. Whitaker does not teach or suggest hybrid maize plant 33R77 developed by a maize breeding program or the use of hybrid maize plant 33R77 in the production of tissue culture. It must be recognized that the hybrids provided by this invention are themselves unusual and unobvious results of a common process, in that they provide the unique combination of exceptional stalk lodging resistance, above average stay green and above average resistance to Gray Leaf Spot and a relative maturity of 113 (see pages 17-20, specification). Nonetheless, Hybrid 33R77 deserves to be considered as a new and non-obvious composition in its own right as does its tissue culture as products of the process when 33R77 is used as starting material. Applicant points out that 33R77 is a unique plant hybrid which never before existed until Applicant filed the application and until its deposit of the same. While Whitaker does teach the general regeneration of maize plants from tissue culture techniques, it does not teach or suggest the use of the unique maize hybrid 33R77. As will be demonstrated below, several morphological and physiological characteristics of Hybrid 33R77 are either different from or not present in 33Y11.

For example, Hybrid 33R77 has above average resistance to Corn Lethal Necrosis while 33Y11 does not teach or suggest any disease resistance. The varieties are also different with respect to anther color, length of ear node leaf, silk color, Anthocyanin of Brace Roots, and disease resistance. Differences between the two varieties are summarized in the table below:

| <u>CHARACTERISTICS</u> | <u>33R77</u> | <u>33Y11</u> |
|------------------------------|---------------------------------------|--------------|
| Anther color | Pink | Red |
| Length of ear node leaf (cm) | 94.1 | 88.4 |
| Silk color | Light Green | Red |
| Anthocyanin of Brace Roots | Dark | Absent |
| Disease Resistance | Resistance to Corn Lethal Necrosis | No teaching |

This comparison clearly shows that 33Y11 does not exhibit the characteristics of hybrid 33R77. Further, the present application clearly shows in Table 1 at pgs. 18-20 and Tables 2-4 at pgs. 23-43 that hybrid 33R77 exhibits a more resistance to Diplodia Ear Rot, higher growing degree unit of silk emergence, a higher drydown and the aforementioned characteristics. This unique and unobvious combination of traits makes hybrid 33R77 particularly well suited to the Central Corn Belt, Southeast, Southcentral, Southwest and Western regions of the United States.

In light of the above, Applicant respectfully requests the Examiner reconsider and withdraw the rejection to claims 1-32 under 35 U.S.C. § 103(a).

Conclusion

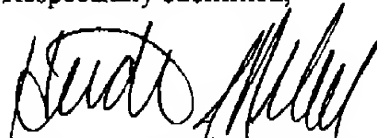
In conclusion, Applicant submits in light of the above amendments and remarks, the claims as amended are in a condition for allowance, and reconsideration is respectfully requested.

No additional fees or extensions of time are believed to be due in connection with this amendment; however, consider this a request for any extension inadvertently omitted, and charge any additional fees to Deposit Account No. 26-0084.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "Version with markings to show changes made."

Reconsideration and allowance is respectfully requested.

Respectfully submitted,



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Application No. 09/759,748

**AMENDMENT — VERSION WITH MARKINGS
TO SHOW CHANGES MADE**

In the Specification

The paragraph beginning at page 36, line 32 has been amended as follows:

With the advent of molecular biological techniques that have allowed the isolation and characterization of genes that encode specific protein products, scientists in the field of plant biology developed a strong interest in engineering the genome of plants to contain and express foreign genes, or additional, or [modified] modified versions of native or endogenous genes (perhaps driven by different promoters) in order to alter the traits of a plant in a specific manner. Such foreign, additional and/or modified genes are referred to herein collectively as "transgenes". Over the last fifteen to twenty years several methods for producing transgenic plants have been developed, and the present invention, in particular embodiments, also relates to transgenic versions of the claimed hybrid maize line 33R77.

In the Claims

Please amend claims 6, 8, 10-12, 14-16, 18, 19, 21, 23-25, 27-29 and 31 as follows:

6. (Amended)

[A] The tissue culture according to claim 5, the cells or protoplasts being from a tissue selected from the group consisting of leaves, pollen, embryos, roots, root tips, anthers, silks, flowers, kernels, ears, cobs, husks, and stalks.

8. (Amended)

The maize plant of claim 2 wherein said plant has been manipulated to be [is] male sterile.

10. (Amended)

The [maize plant breeding program] method of claim 9 wherein plant breeding techniques are selected from the group consisting of: recurrent selection, backcrossing, pedigree breeding, restriction fragment length polymorphism enhanced selection, genetic marker enhanced selection, and transformation.

11. (Amended)

A maize plant, or its parts, wherein at least one ancestor of said maize plant is the maize plant, or its parts, of claim 2, wherein said maize plant has derived at least 50% of its ancestral alleles from 33R77 [said maize plant] and is capable of expressing a combination of at least two 33R77 traits selected from the group consisting of: high yield for its maturity, above average stalk quality, ability to produce high and consistent grain yield across its comparative relative maturity zone, suited to the Central Corn Belt, Southeast, Southcentral, Southwest, and Western regions of the United States, and a relative maturity of approximately 113 based on the Comparative Relative Maturity Rating System for harvest moisture of grain.

12. (Amended)

[A] The hybrid maize plant according to claim 2, wherein the genetic material of said plant contains one or more transgenes.

14. (Amended)

The [maize plant breeding program] method of claim 13 wherein plant breeding techniques are selected from the group consisting of: recurrent selection, backcrossing, pedigree breeding, restriction fragment length polymorphism enhanced selection, genetic marker enhanced selection, and transformation.

15. (Amended)

A maize plant, or its parts, wherein at least one ancestor of said maize plant is the maize plant, or its parts, of claim 12, wherein said maize plant has derived at least 50% of its ancestral alleles from 33R77 [said maize plant] and is capable of expressing a combination of at least two 33R77 traits selected from the group consisting of: high yield for its maturity, above average stalk quality, ability to produce high and consistent grain yield across its comparative relative maturity zone, suited to the Central Corn Belt, Southeast, Southcentral, Southwest, and Western regions of the United States, and a relative maturity of approximately 113 based on the Comparative Relative Maturity Rating System for harvest moisture of grain.

16. (Amended)

[A] ~~The~~ hybrid maize plant according to claim 2, wherein the genetic material of said plant contains one or more genes transferred by backcrossing.

18. (Amended)

The [maize plant breeding program] method of claim 17 wherein plant breeding techniques are selected from the group consisting of: recurrent selection, backcrossing, pedigree breeding, restriction fragment length polymorphism enhanced selection, genetic marker enhanced selection, and transformation.

19. (Amended)

A maize plant, or its parts, wherein at least one ancestor of said maize plant is the maize plant, or its parts, of claim 16, wherein said maize plant has derived at least 50% of its ancestral alleles from 33R77 [said maize plant] and is capable of expressing a combination of at least two 33R77 traits selected from the group consisting of: high yield for its maturity, above average stalk quality, ability to produce high and consistent grain yield across its comparative relative maturity zone, suited to the Central Corn Belt, Southeast, Southcentral, Southwest, and Western regions of the United States, and a relative maturity of approximately 113 based on the Comparative Relative Maturity Rating System for harvest moisture of grain.

21. (Amended)

The maize plant of claim 20 wherein said maize plant has been manipulated to be [is] male sterile.

23. (Amended)

The [maize plant breeding program] method of claim 22 wherein plant breeding techniques are selected from the group consisting of: recurrent selection, backcrossing, pedigree breeding, restriction fragment length polymorphism enhanced selection, genetic marker enhanced selection, and transformation.

24. (Amended)

A maize plant, or its parts, wherein at least one ancestor of said maize plant is the maize plant, or its parts, of claim 20, wherein said maize plant has derived at least 50% of its ancestral alleles from 33R77 [said maize plant] and is capable of expressing a combination of at least two 33R77 traits selected from the group consisting of: high yield for its maturity, above average stalk quality, ability to produce high and consistent grain yield across its comparative relative maturity zone, suited to the Central Corn Belt, Southeast, Southcentral, Southwest, and Western regions of the United States, and a relative maturity of approximately 113 based on the Comparative Relative Maturity Rating System for harvest moisture of grain.

25. (Amended)

[A] The hybrid maize plant according to claim 20, wherein the genetic material of said plant contains one or more transgenes.

27. (Amended)

The [maize plant breeding program] method of claim 26 wherein plant breeding techniques are selected from the group consisting of: recurrent selection, backcrossing, pedigree breeding, restriction fragment length polymorphism enhanced selection, genetic marker enhanced selection, and transformation.

28. (Amended)

A maize plant, or its parts, wherein at least one ancestor of said maize plant is the maize plant, or its parts, of claim 25, wherein said maize plant has derived at least 50% of its ancestral alleles from 33R77 [said maize plant] and is capable of expressing a combination of at least two 33R77 traits selected from the group consisting of: high yield for its maturity, above average stalk quality, ability to produce high and consistent grain yield across its comparative relative maturity zone, suited to the Central Corn Belt, Southeast, Southcentral, Southwest, and Western regions of the United States, and a relative maturity of approximately 113 based on the Comparative Relative Maturity Rating System for harvest moisture of grain.

29. (Amended)

[A] The hybrid maize plant according to claim 20, wherein the genetic material of said plant contains one or more genes transferred by backcrossing.

31. (Amended)

The [maize plant breeding program] method of claim 30 wherein plant breeding techniques are selected from the group consisting of: recurrent selection, backcrossing, pedigree breeding, restriction fragment length polymorphism enhanced selection, genetic marker enhanced selection, and transformation.

Please add new claims 33 – 43 as follows:

33. (New)

A method of making a hybrid maize plant designated 33R77 comprising:
crossing an inbred maize plant GE515419, deposited as _____ with a second inbred maize plant
GE567914, deposited as _____; and
developing from the cross a hybrid maize plant representative seed of which having been
deposited under ATCC Accession Number _____.

34. (New)

A method of making an inbred plant comprising:
obtaining a hybrid maize plant 33R77 and
generating from said hybrid maize plant a parental inbred parent line, said line selected
from the group consisting of GE515419 deposited as _____ and GE567914 deposited as
_____.

35. (New)

The method of claim 34 wherein said generating step comprises using double haploid
breeding.

36. (New)

A method of producing a 33R77 progeny maize plant in a plant breeding program
comprising:
obtaining the maize plant, or its parts, produced by growing the hybrid maize seed designated
33R77,
utilizing said plant or parts thereof as a source of breeding material, and preferentially selecting
for a 33R77 progeny plant with at least two desirable morphological or physiological
characteristics of the plant or parts thereof produced by growing the hybrid maize seed
designated 33R77,
said at least two morphological or physiological characteristics selected from the characteristics
listed on the chart in Tables 1-4, thereby producing said progeny maize plant.

37. (New)

The 33R77 progeny maize plant produced by the method of claim 36, wherein the
pedigree of said 33R77 progeny maize plant has two or less cross-pollinations to a maize plant
other than the hybrid maize seed designated 33R77.

38. (New)

The method of claim 36 wherein the maize plant breeding program comprises one or more of the following: recurrent selection, backcrossing, pedigree breeding, restriction fragment length polymorphism enhanced selection, genetic marker enhanced selection, making double haploids and transformation techniques.

39. (New)

A method for producing a population of 33R77 progeny hybrid maize plants comprising:

- (a) obtaining a first generation progeny maize seed produced by crossing the maize plant produced by growing the hybrid maize seed designated 33R77 with a second maize plant;
- (b) growing said first generation progeny maize seed to produce F_1 generation maize plants and obtaining self-pollinated seed from said F_1 generation maize plants;
- (c) growing said self-pollinated seed to produce F_2 maize plants and obtaining further self-pollinated seed from said F_2 maize plants; and
- (d) repeating the steps of growing and harvesting successive filial generations by selecting for morphological and physiological traits in Table(s) 1-4 to obtain a population of 33R77 progeny hybrid maize plants.

40. (New)

The population of 33R77 progeny hybrid maize plants produced by the method of claim 39, said population, on average, deriving at least 50% of its ancestral alleles from 33R77.

41. (New)

A hybrid seed selected from the population of 33R77 progeny hybrid maize plants produced by the method of claim 39, said hybrid seed deriving at least 50% of its ancestral alleles from 33R77.

42. (New)

The method of claim 39, further comprising applying double haploid methods to said F_1 generation maize plant or to a successive filial generation thereof.

43. (New)

A method of producing an hybrid maize plant derived from the maize variety 33R77, the method comprising the steps of:

- (a) preparing a progeny plant derived from maize variety 33R77 by crossing a plant of the maize variety 33R77 with a second maize plant, wherein a sample of the seed of the maize variety 33R77 was deposited under ATCC Accession No. _____;
- (b) crossing the progeny plant with itself or a second plant to produce a seed of a progeny plant of a subsequent generation;
- (c) growing a progeny plant of a subsequent generation from said seed and crossing the progeny plant of a subsequent generation with itself or a second plant; and
- (d) repeating steps (b) and (c) for an additional 3-5 generations to produce a hybrid maize plant derived from the hybrid variety 33R77.